

ASSESSING THE EFFECTIVENESS OF E-GOVERNMENT SERVICE ON PUBLIC TRUST AND ENGAGEMENT IN MEDAN: A STRUCTURAL EQUATION MODELLING APPROACH

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Abstract

Research Objectives The purpose of this study is to find out and analyze the extent to which the innovation variables of the E-Government application affect the increase of public trust and increase community involvement through the effectiveness of E-Government as an intervening variable. **Originality** The subject of this study is the community/residents of Medan City, where the variables in this study are independent variables, namely E-Government application innovation, dependent variables, namely variables of increasing public trust and increasing community involvement and intervening variables are variables of E-Government effectiveness. The results of data analysis were carried out by SEM analysis using SMART PLS 4.0 software. The data collection technique is by observation and documentation studies. **Design/methodology/approach** The research method uses a quantitative descriptive method of data analysis using *the structural equation model* (SEM) method, where the results of data processing using the SEM method are carried out with the PLS 4.0 application. **Findings** According to the results of the study, partially the variables of E-Government application innovation affect the increase in public trust, increase community involvement and affect the effectiveness of E-Government. E-Government effectiveness variables affect the increase in public trust and increase community involvement. Simultaneously, the E-Government application has an effect on increasing public trust and has an effect on increasing public involvement through the E-Government effectiveness variable as an intervening variable. **Implementation** Increasing innovation in E-Government application services. The better the effectiveness of E-Government in improving the quality of existing services, the more public trust in E-Government services will increase because it is easy, fast and easy to create, and creates a lot of community involvement and reaches the entire community.

Keywords : E-Government Effectiveness, E-Government Application Innovation, Increasing Public Trust, Increasing Community Involvement.

1. INTRODUCTION

E-Government can create a measurable form of service, and can form a service that tends to be able to improve the self-ability of the institution that uses the application. This E-Government is part of the digital application development process aimed at gathering all forms of existing services in the hope of serving the entire community as users of the E-Government application regarding public sector services (Muir, A. M., 2023).

E-Government has the main goal, which is to increase efficiency and effectiveness in the implementation of public services. With digitalization, the bureaucratic process can be accelerated and optimized, so that the public services carried out can achieve the goals and public complaints can be overcome through E-Government (Abdulkareem, Abdulrazaq Kayode and Mohd Ramli, 2022).

E-Government allows for wider access to public information, thereby increasing transparency. This system also makes it easier to monitor and evaluate government performance, which in turn increases accountability, where this form of accountability from E-Government is carried out in order to create a form of service that is right on target and reaches existing problems, and is able to solve problems experienced by

the community (Demeshko, Anastassia, 2022). E-Government allows the Government to always improve service innovations that were previously dominated by manual activities, where in this E-Government all policies and service programs that do not exist are included in an application, so that the services presented can reach many people, and are able to accommodate information, messages and complaints from people who have never been served with the E-Government application, as well as for people who are still not satisfied with the services that manual and also E-Government service (Hardy, Andy, 2022).

In this E-Government innovation, an innovation is needed that is able to pamper the community with the form of service that must be implemented in accordance with the expectations of the community and in accordance with the wishes of the community. The E-Government application contains service innovations in several agencies, where this service must enter one door, no longer many doors whose services take a lot of time and are long, and convoluted, and even tend to harm the community who should be fast and cheap in the public sector can be expensive because there are many doors that will be entered (Hyytinen, Ari, Tuimala & and Hammar, 2022).

Another innovation is the ease of using the E-Government application, where with the e-Government application, people can access government services anytime and from anywhere without having to come to the government office. This is especially helpful for those who live in remote areas (Jameel et al., 2019). E-Government provides a platform for the public to participate in the decision-making process. For example, through online public consultations, surveys, and discussion forums (Amoah, Benjamin, 2023).

The public is also involved in providing criticism and suggestions aimed at the comment column on the E-Government application, where these criticisms and suggestions are needed by the Government in implementing various complaints into a policy through the application, so that E-Government can create comprehensive solutions not only to improve the quality of services, but also to increase the treasury of service applications that are needed by the community (Ly, Bora and Ly, 2023).

Digitization of public services can reduce government operational costs, such as reducing the use of paper, reducing service time, and efficiency in resource management, where existing applications no longer use existing paper, but need to be filled in appropriately and quickly, so that they no longer need data with manual writing that requires less effective data, because the data requires paper and manual file storage (Batidzirai, Bothwell, 2021).

Manual file storage takes a long time to search, so time is wasted and existing services have not met their expectations. This E-Government application requires a lot of time in searching for data, where the data has been recorded and stored neatly without the need for manual equipment, so it is practical and effective, as well as efficient and can reach the entire community (Kyriakidis, Charalampos, 2023).

The rapid development of information and communication technology requires the government to adapt and utilize this technology to improve the quality of public services. The better the existing service and the higher the quality of the service displayed, the more effective the use of the existing E-Government will be, so that it will create its own comfort in the minds of the public, where people will have no difficulty in using the application (Montt-Blanché, Denise, Najmi, Sheba and Spinillo, 2023). Innovation from the E-Government application if it is able to detect community

problems and is able to serve the community according to expectations creates a necessity to create the effectiveness of the E-Government application which is able to influence the increase in community involvement to continue to support the E-Government application (Rosas, Etienne, 2021). This innovation also creates effectiveness in order to collect all forms of existing services, as well as create its own satisfaction for users and create effective and sustainable services (Mulyasari, F., 2021). In the era of globalization, countries are required to increase their competitiveness, including in terms of government effectiveness and efficiency. E-Government is one way to achieve this goal, where E-Government can raise the image of the Government in the eyes of the community and its people to create services that are able to involve the community and create satisfaction with the work done serving community complaints and also overcoming problems experienced by the community wisely (Okada, Hiroko, 2023).

E-Government allows for better data management and analysis, which can be used for more informational and data-based decision-making, where the protection of public data and Government data must be strengthened so that the public feels that the Government is really working for the people and protecting the people, as well as serving public complaints and problems to be resolved quickly, including the protection of public data in E-Government (Twizeyimana, Jean Damascene and Andersson, 2019).

Medan has a population of around 2,494,512 people, where the services carried out still rely on the manual system and some use E-Government. This indicates that service innovations carried out through E-Government have not been implemented properly, so that they have not been able to increase the effectiveness of the E-Government application, where the services provided have not been able to gather all the people of Medan City, and have not even been able to fully involve the community, as a result of which it has an impact on a decrease in public trust in the Medan City Government and makes the community not feel satisfied when using E-Government services due to not being able to the existence of services that meet the expectations and needs of the community.

Problem Formulation

The formulation of the problem that emerged from this study is how the innovation variable of the E-Government application affects the increase of public trust and increase community involvement through the effectiveness of E-Government as an intervening variable.

Research Objectives

The purpose of this study is to find out and analyze the extent to which the innovation variable of the E-Government application affects the increase in public trust and increase community involvement through the effectiveness of E-Government as an intervening variable.

Originality of Research

The subject of this study is the community/residents of Medan City, where the variables in this study are independent variables, namely E-Government application innovation, dependent variables, namely variables of increasing public trust and increasing community involvement, and intervening variables are variables of E-Government effectiveness. The results of data analysis were carried out by SEM

analysis using SMART PLS 4.0 software. The data collection technique is by observation and documentation studies.

2. LITERATURE REVIEW

E-Government Application Innovation

Innovation in e-Government applications is essential to improve the quality of public services, operational efficiency, and community participation (Arayankalam, Jithesh, Khan, Anupriya and Krishnan, 2021). Innovations that can be developed in E-Government are integrated portals, mobile government, e-learning and the use of *Augmented Reality* and *Virtual Reality* (Ni et al., 2021). The indicators of this E-Government innovation are:

- 1) Service availability
- 2) Accessibility
- 3) Papacy of users
- 4) Transparency
- 5) Operational efficiency
- 6) Public participation (Cortés-Cediel, María E., 2023)

Effectiveness of E-Government

The effectiveness of e-Government can be measured through various indicators that reflect the extent to which the application of information and communication technology has improved the performance and quality of government services (van der Giessen, Mark and Bayerl, 2022). The more effective the E-Government, the more capable it is to serve the community and the more quality of services displayed (Ratio, Marnel Arnold, Gabo-Ratio, Jillian Aira and Fujimitsu, 2020). The indicators of the effectiveness of E-Government are:

- 1) Utilization of technology services
- 2) Public participation
- 3) User satisfaction
- 4) On time (Alhaffar, MHD Bahaa Aldin, Joury, Easter and Eriksson, 2023)

Increasing Public Trust

Increasing public trust in e-Government is one of the main goals in the development and application of digital government technology. This trust is very important because it affects the level of adoption and public participation in e-Government services (Esponda, Georgina Miguel, 2022). Increasing public trust in the government and e-Government services is a sustainable and multidimensional process (Shahzad, Muhammad Farrukh, 2023). Indicators of increased public trust are:

- 1) Transparency
- 2) Accountability
- 3) Satisfactory service
- 4) Quick response (Panayiotou, Nikolaos A. and Stavrou, 2021)

Increased Community Engagement

Increased community involvement in e-Government is essential to ensure that public services and policies reflect the needs and aspirations of citizens (Afieroho, Peace, 2023). The strategy carried out to increase public involvement is to improve the quality of the public consultation platform, provide a comment column, provide a response column platform, and provide a discussion forum platform (Zou et al., 2023). The indicators of increased community involvement are:

- 1) Community participation
- 2) Response and response
- 3) Feedback from the community (Stewart, Rebecca E., 2021)

Conceptual Framework

The conceptual framework of the research is:

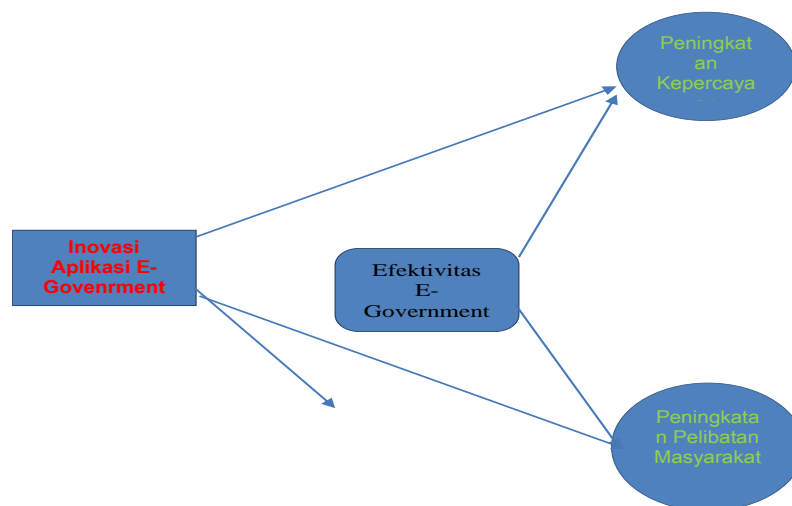


Figure 1: Conceptual Framework

Hypothesis

- 1) E-Government application innovation has an effect on increasing public trust in Medan City
- 2) E-Government application innovation has an effect on increasing community involvement in Medan City
- 3) E-Government application innovation affects the effectiveness of E-government
- 4) The effectiveness of E-Government has an effect on increasing the trust of the people of Medan City
- 5) The effectiveness of E-Government affects the increase in community involvement in Medan City
- 6) E-Government application innovation has an effect on increasing public trust in Medan City through E-Government Effectiveness as an intervening variable
- 7) The innovation of the E-Government application has an effect on increasing the involvement of the people of Medan City through the Effectiveness of E-Government as an intervening variable.

3. RESEARCH METHODS

This research method was carried out using a quantitative descriptive method using method analysis *Structural Equation Model* (SEM), where according to (Zou et al., 2023) SEM analysis is a data analysis method aimed at understanding how construct variables affect each other. The population in this study is 2,494,512 residents of Medan City in 2023, where the sampling method is carried out using the *Stratified random sampling*, which according to (Zou et al., 2023) sampling method using *Stratified random sampling* is a sampling in which the population is divided into several homogeneous subgroups or strata, and then a random sample is taken from each strata, where sampling is based on the level of education (low to high education strata)

The number of samples taken can be done using the slovin formula as follows:

$$n = N / (1 + Ne^2) = 2,494,512 / (1 + 2,494,512 \times 0.1^2) = 99.99 = 100 \text{ inhabitants of Medan City}$$

4. RESEARCH RESULTS AND DISCUSSION

Research Results

The output of the SEM test can be described through the following *Bootstrapping* diagram:

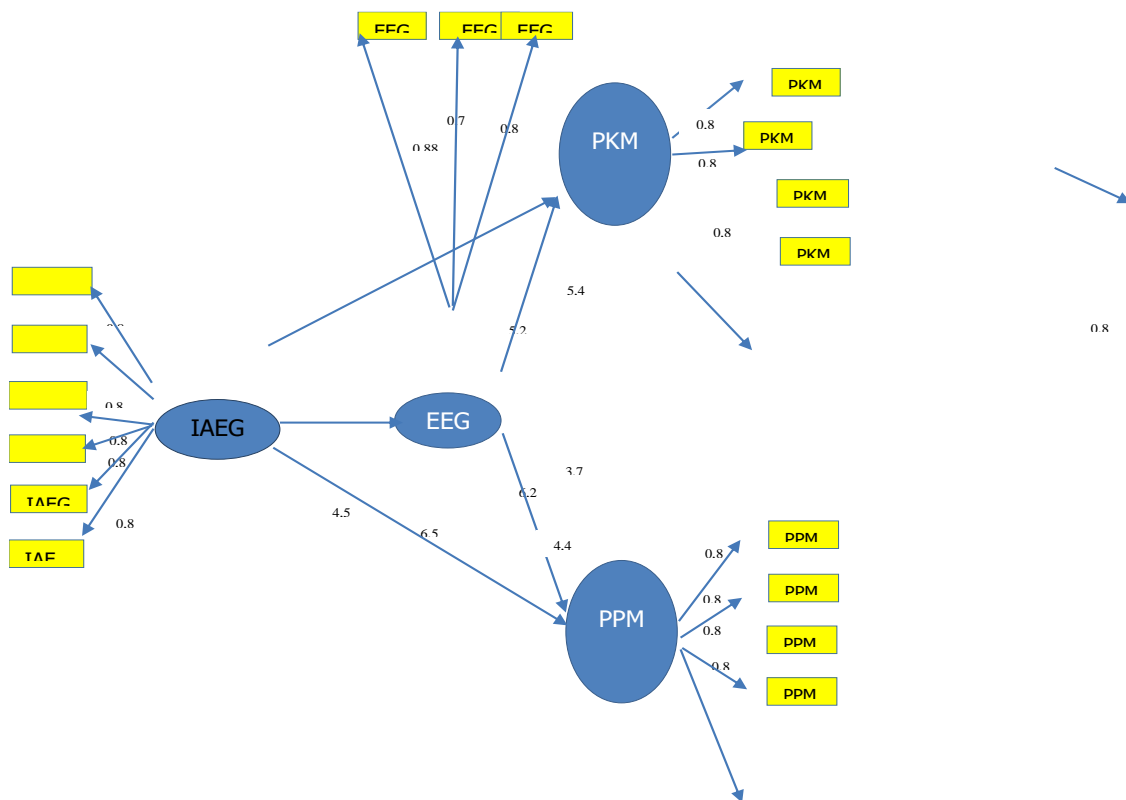


Figure 2: Bootstrapping Diagram

Convergent Validity Analysis

(Zou et al., 2023) states that the analysis *convergent validity* is one of the analyses that describes the validity of data from various construct variables. The test results *convergent validity* In this study, it is as follows:

Table 1: Convergent Validity Test

Variable	Indicators	Outer Loading
E-Government Application Innovation (X)	IAEG 1	0,857
	IAEG 2	0,873
	IAEG 3	0,865
	IAEG 4	0,810
	IAEG 5	0,836
	IAEG 6	0,828
Increasing Public Trust (Y1)	PKM 1	0,866
	PKM 2	0,875
	PKM 3	0,874
	PKM 4	0,876
Increased Community Engagement (Y2)	PPM 1	0,844
	PPM 2	0,835
	PPM 3	0,837
	PPM 4	0,806
E-Government Effectiveness (Z)	EEG 1	0,882
	EEG 2	0,769
	EEG 3	0,824

Source: Results of Data Processing with PLS 3.0, 2024

The table above states that the data of each construct variable has explained the element of validity in the results of the data processing.

Analysis of Average Variant Extracted (AVE)

(Zou et al., 2023) stated that the AVE test is one of the tests aimed at finding out whether or not the data of each construct variable is valid for data processing. The test results *Average Variant Extracted (AVE)* is in the following table:

Table 2: AVE Test

Variable	AVE
E-Government Application Innovation (X)	0,836
Increasing Public Trust (Y1)	0,876
Increased Community Engagement (Y2)	0,855
E-Government Effectiveness (Z)	0,856

Source: Data Processing Results with PLS 4.0, 2024

The table above describes the *Average Variant Extracted (AVE)* value greater than 0.5 which means that the data distribution of each construct variable is feasible or valid to use.

Composite Reliability Analysis

According to (Zou et al., 2023) Testing *Composite Reliability* It is an analysis to explain whether the existing data is reliable or suitable for data processing. This can be seen in the following table:

Table 3: Composite Reliability Test

Variable	Composite Reliability
E-Government Application Innovation (X)	0,888
Increasing Public Trust (Y1)	0,828
Increased Community Engagement (Y2)	0,878
E-Government Effectiveness (Z)	0,858

Source: Data Processing Results with PLS 4.0, 2024

The table above states that *the composite reliability* value is greater than 0.6, where the data is reliable or suitable for data processing.

Discriminant Validity Analysis

In confirmatory factor analysis (CFA) or structural equation modeling (SEM), the validity analysis of discrimination is how much the relationship between construct equations affects each other in existing variables. The results of *the Discriminant Validity* analysis can be seen in the following Table 5:

Table 5: Discriminant Validity Analysis

	Increasing Public Trust Moderating Effect 1	Increasing Public Trust Effect 2	Increasing Public Trust Moderating Effect 3	Increasing Public Trust Moderating Effect 4
E-Government Application Innovation	.752	1.000	.757	.622
Increased Community Engagement	.666	.832	1.000	.722
Increasing Public Trust	.757	.782	.837	1.000
Effectiveness of E-Government	1.000	.742	.666	.632

Source: PLS Data Processing Results, 2023

Based on the table above, it can be seen that the value of the equation that arises from data processing has met *the discriminant validity*.

Path Coefficient Testing

As for the *path coefficient test*, it can be found through the following table:

Table 6: R Square Test

Variable	R Square
E-Government Application Innovation (X)	0,885
Increasing Public Trust (Y1)	0,864
Increased Community Engagement (Y2)	0,872
E-Government Effectiveness (Z)	0,855

Source: Data Processing Results With PLS 3.0, 2023

The R Square value of the variable of increasing public trust can be explained by the variable of E-Government application innovation and E-Government effectiveness of 87.2%, while the remaining 12.8% can be explained by other variables that are not discussed in the study.

The variable of increasing community involvement can be explained by the variable of E-Government application innovation and E-Government effectiveness of 86.4%, while the remaining 13.6% can be explained by other variables that are not discussed in the study.

Hypothesis Test

The results of hypothesis testing can be seen through the following table:

Table 7: Hypothesis Test

Hypothesis	Influence	T-Statistics	P-Value	Result
H1	E-Government innovation towards increasing public trust	5,411	0,001	Accepted
H2	E-Government innovation towards increasing community involvement	6,524	0,000	Accepted
H3	E-Government Innovation on the effectiveness of E-Government	4,542	0,002	Accepted
H4	The effectiveness of E-Government on increasing public trust	5.232	0,000	Accepted
H5	The effectiveness of E-Government in increasing community involvement	6,222	0,001	Accepted
H6	E-Government Innovation on Increasing Public Trust through E-Government Effectiveness as an Intervening Variable	4,443	0,002	Accepted
H7	E-Government Innovation on Increasing Community Involvement through E-Government Effectiveness as an Intervening Variable	3,761	0,000	Accepted

Source: Data Processing Results With PLS 3.0, 2023

According to the table above, partially the variables of E-Government application innovation affect the increase in public trust, increase community involvement and affect the effectiveness of E-Government. E-Government effectiveness variables affect the increase in public trust and increase community involvement. Simultaneously, the E-Government application has an effect on increasing public trust and has an effect on increasing public involvement through the E-Government effectiveness variable as an intervening variable.

Discussion

E-Government Application Innovation Has an Effect on Increasing Public Trust

The results of the study stated that E-Government application innovation affect the increase of public trust. This is in accordance with research (Zhu & Hu, 2023) which states that the E-Government innovations created will make the public believe that the Government serves well and sincerely to improve the performance of its institutions.

E-Government Application Innovation Affects Increasing Community Involvement

According to the results of the existing research E-Government application innovation affecting the increase in community involvement. This is in accordance with research (Nookhao & Kiattisin, 2023) which states that the more innovative the E-Government service platform, the more it will reach the community and the more community involvement is obtained.

E-Government Application Innovation Affects the Effectiveness of E-Government

According to the results of the existing research E-Government application innovation affect the effectiveness of E-Government. This is in accordance with research (Khan, Sohrab, 2020) who stated that the innovations designed will create E-Government services that have high effectiveness in facilitating community services

The Effectiveness of E-Government Affects Increasing Public Trust

According to the results of existing research, the variable of E-Government effectiveness has an effect on increasing public trust. This is in line with research (Lee et al., 2020) which stated that the effectiveness of work in E-Government services can increase the trust of the public in the performance of the Government, as well as increase confidence that the services provided will not be complicated by the Government Apparatus.

The Effectiveness of E-Government Affects Increasing Community Involvement

The results of the study stated that E-Government has an effect on increasing community involvement. This is in accordance with research (Chen, Tao, 2021) who explained that the more effective the E-Government will be, the more able it will be able to reach many people, so that community involvement will tend to increase in order to improve good service performance and serve.

E-Government Application Innovation Affects Increasing Public Trust through the Effectiveness of E-Government as an Intervening Variable

The results of the study explain that the variable E-Government application innovation affect the increase of public trust through the effectiveness of E-Government as an intervening variable. This is in accordance with research (Guo, Yue, Chen, Jidong and Liu, 2022) who explained that the more innovative E-Government is, the more effective its use will be to serve the community, and will make the public increase their trust in the services provided.

E-Government Application Innovation Affects Increasing Community Involvement through the Effectiveness of E-Government as an Intervening Variable

The results of the study explain that the variable E-Government application innovation affect the increase of community involvement through the effectiveness of E-Government as an intervening variable. This is in accordance with research (Yuan, Yun Peng, 2023) who stated that the better the innovation of the E-Government application, the more efficient the services delivered, so as to be able to increase community involvement to participate in supporting E-Government services.

Implementation

The increase in innovation in E-Government application services, the better the effectiveness of E-Government in improving the quality of existing services, the more public trust in E-Government services will increase because it is easy, fast and easy, and creates a lot of community involvement and reaches the entire community.

4. CONCLUSION

According to the results of the study, partially the variables of E-Government application innovation affect the increase in public trust, increase community involvement and affect the effectiveness of E-Government. E-Government effectiveness variables affect the increase in public trust and increase community involvement Simultaneously, the E-Government application has an effect on increasing public trust and has an effect on increasing public involvement through the E-Government effectiveness variable as an intervening variable.

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